Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel comprising:

a) contacting a 9q PCIP polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 16, 18, 20, 22, 24, 26, and 28, or a cell expressing said 9q PCIP polypeptide with a test compound; and

b) determining whether said test compound binds to and/or modulates the activity of said 9q PCIP polypeptide, thereby identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel.

2. (Previously Presented) The method of claim 1, wherein the binding of said test compound to said 9q PCIP polypeptide, is detected by a method selected from the group consisting of:

a) detection of binding by direct detection of test compound/polypeptide binding;

b) detection of binding using a competition binding assay; and

c) detection of binding using an assay for PCIP activity.

3. (Previously Presented) A method for identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel, comprising:

a) incubating a cell expressing i) a potassium channel comprising a Kv4.3 or Kv4.2 subunit, or a fragment thereof that functions as a potassium channel and ii) a 9q PCIP polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 16, 18, 20, 22, 24, 26, and 28, in the presence and absence of a test compound; and

b) determining whether the test compound modulates the interaction of the potassium channel or fragment thereof with said 9q PCIP polypeptide, thereby identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel.

4-10. (Canceled)

11. (Previously Presented) The method of any one of claims 1, 3, 17 or 19 wherein said compound is useful in treating a subject suffering from a cardiovascular disorder ~~is~~ associated with an abnormal I_{to} current.

12. (Previously Presented) The method of any one of claims 1, 3, 17 or 19, wherein said 9q PCIP is a human 9q.

13-14. (Canceled)

15. (Previously Presented) The method of any one of claims 1, 3, 17 or 19, wherein said compound is useful in treating a subject suffering from long-QT syndrome.

16. (Previously Presented) The method of any one of claims 1, 3, 17 or 19, wherein said compound is useful in treating a subject suffering from congestive heart failure.

17. (Previously Presented)A method for identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel, comprising:

a) contacting a biologically active fragment of a 9q PCIP polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 16, 18, 20, 22, 24, 26, and 28, wherein said biologically active fragment is selected from the group consisting of an EF domain, residues 68-252 of human 9q, and a Kv4.3 or Kv4.2 potassium channel α subunit binding domain, or a cell expressing said biologically active fragment of said 9q PCIP polypeptide with a test compound; and

b) determining whether said test compound binds to and/or modulates the activity of said biologically active fragment, thereby identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel.

18. (Previously Presented) The method of claim 17, wherein the binding of said test compound to said biologically active fragment of said 9q PCIP polypeptide, is detected by a method selected from the group consisting of:

a) detection of binding by direct detection of test compound/biologically active fragment binding;

b) detection of binding using a competition binding assay; and

c) detection of binding using an assay for PCIP activity.

19. (Previously Presented)A method for identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel, comprising:

a) incubating a cell expressing i) a potassium channel comprising a Kv4.3 or Kv4.2 subunit, or a fragment thereof that functions as a potassium channel, and ii) a biologically active fragment of a 9q PCIP polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 16, 18, 20, 22, 24, 26, and 28, wherein said biologically active fragment is selected from the group consisting of an EF domain, residues 68-252 of human 9q, and a Kv4.3 or Kv4.2 potassium channel α subunit binding domain, in the presence and absence of a e test compound; and

b) determining whether the test compound modulates the interaction of the potassium channel or fragment thereof with said biologically active fragment of said 9q PCIP polypeptide, thereby identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel.

20-23. (Canceled)

24. (Previously Presented) The method of claim 17 or 19, wherein the EF domain is selected from the group consisting of:

a) residues 116-127, 153-164, 189-200, or 237-248 of SEQ ID NO:14;

b) residues 103-114, 140-151, 176-187, or 224-235 of SEQ ID NO:16;

c) residues 116-127, 153-164, 189-200, or 237-248 of SEQ ID NO:18;

d) residues 98-109, 135-146, 171-182, or 219-230 of SEQ ID NO:20;

e) residues 98-109, 135-146, 171-182, or 219-230 of SEQ ID NO:22;

f) residues 116-127, 103-114, 139-150, or 187-198 of SEQ ID NO:24;

g) residues 66-77, 103-114, 189-200 or 237-248 of SEQ ID NO:26; and

h) residues 98-109, 135-146, 171-182, or 219-230 of SEQ ID NO:28.

25. (Previously Presented) A method for identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel comprising:

a) contacting a polypeptide that is at least 95% identical to a 9q PCIP polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 16, 18, 20, 22, 24, 26, and 28 and retains the ability to bind to a Kv4 channel, or a cell expressing said polypeptide with a test compound; and

b) determining whether said test compound binds to and/or modulates the activity of said polypeptide, thereby identifying a compound that binds to and/or modulates the activity of a Kv4.2 or Kv4.3 potassium channel.

26. (New) The method of any one of claims 1, 3, 17, 19 or 25, wherein the activity of a Kv4 channel is selected from the group consisting of: regulation of I_{to} currents, regulation of peak current amplitudes, regulation of current density, regulation of inactivation time constants, regulation of recovery form inactivation time constants, and interaction with PCIP polypeptides.